

REMARKS

In the Office Action mailed November 6, 2006, the Examiner took the following action: (1) objected to claims 1 and 13; (2) rejected claims 1-3 under 35 U.S.C. 103(a) as being unpatentable over York (U.S. 4,932,814) in view of Ellerstein (U.S. 2,360,942); (3) rejected claims 4-6 and 8-10 under 35 U.S.C. 103(a) as being unpatentable over York in view of Ellerstein, and further in view of Orrell (U.S. 4,720,897); (4) rejected claims 7 and 11 under 35 U.S.C. 103(a) as being unpatentable over York in view of Ellerstein and Orrell, and further in view of Kostorzewski (U.S. 5,072,948); (5) rejected claim 12 under 35 U.S.C. 103(a) as being unpatentable over York in view of Ellerstein, and further in view of Brown (U.S. 6,382,889); and (6) rejected claims 13-26 under 35 U.S.C. 103(a) as being unpatentable over York in view of Ellerstein and Orrell, and further in view of Boyd-Davis (U.S. 6,843,328).

Applicant respectfully requests reconsideration in view of the foregoing amendments and the following remarks.

I. Claim Objections

The Examiner objected to Applicant's use of the term "drive member" in claims 1 and 13 and required correction. Applicants have amended claims 1 and 13 in accordance with the Examiner's instructions, and therefore request reconsideration and withdrawal of the objections.

II. Rejections under 35 U.S.C. §103(a)

Claims 1-12

As amended, claim 1 recites an apparatus for performing a manufacturing operation on a workpiece, the apparatus comprising a base member having a first aperture disposed therethrough; a drive platform having a second aperture disposed therethrough, the drive platform being spaced apart from the base member by a separation distance and aligned with the base member such that the first and second apertures are approximately aligned along an axis; a

plurality of guide members extending between the drive platform and the base member, at least one of the drive platform and the base member being moveable along the guide members to at least one of increase and decrease the separation distance; at least one drive member operatively coupled between the drive platform and the base member, wherein the plurality of guide members and the at least one drive member are distributed around a perimeter of the first and second apertures; and *a servo motor operatively coupled to the at least one drive member by a feed unit that includes at least one drive belt operatively coupled between an output shaft of the servo motor and the at least one drive member* such that as the servo motor drives the at least one drive member, the separation distance is varied. (emphasis added).

York (U.S. 4,932,814)

York teaches a line boring machine having a first support means 24 coupled to a second support means 22 by a pair of guide members 18 and a threaded rod 32. A motor 36 drives the threaded rod 32, thereby adjusting a separation distance between the first and second support means 24, 22.

York does not disclose, teach, or fairly suggest the apparatus recited in claim 1. Specifically, York fails to teach or fairly suggest an apparatus that includes “*a servo motor operatively coupled to the at least one drive member by a feed unit that includes at least one drive belt operatively coupled between an output shaft of the servo motor and the at least one drive member* such that as the servo motor drives the at least one drive member, the separation distance is varied” as recited in claim 1. Accordingly, claim 1 is allowable over York.

Ellerstein (U.S. 2,360,942)

Ellerstein teaches a drill guide having a collar 13 coupled to a plate 24 by a plurality of cylinders 19 that slideably engage with pins 21 projecting outwardly from the plate 24. (2:33-

47). A drill 10 is engaged with the collar 13 and is guided by the cylinders 19 and pins 21 as the drill 10 is advanced toward the workpiece.

Ellerstein does not remedy the above-noted deficiencies of York. Specifically, Ellerstein fails to teach or fairly suggest an apparatus that includes *"a servo motor operatively coupled to the at least one drive member by a feed unit that includes at least one drive belt operatively coupled between an output shaft of the servo motor and the at least one drive member such that as the servo motor drives the at least one drive member, the separation distance is varied"* as recited in claim 1. Accordingly, claim 1 is allowable over York and Ellerstein, either singly or in any properly motivated combination thereof.

Orrell (U.S. 4,720,897)

Orrell teaches an assembly having a servomotor 70 coupled to a drill spindle 66. The servomotor 70 includes windings 120 driven by a field assembly having rare earth magnets. (5:51-6:9). According to Orrell, the drill spindle 66 is moved toward the workpiece by hydraulic pressure. (8:26-36).

Orrell does not remedy the above-noted deficiencies of York and Ellerstein. Specifically, Orrell fails to teach or fairly suggest an apparatus that includes *"a servo motor operatively coupled to the at least one drive member by a feed unit that includes at least one drive belt operatively coupled between an output shaft of the servo motor and the at least one drive member such that as the servo motor drives the at least one drive member, the separation distance is varied"* as recited in claim 1. Accordingly, claim 1 is allowable over Orrell, either singly or in any properly motivated combination with York and Ellerstein.

Kostrzewski (U.S. 5,072,948)

Kostrzewski teaches a seal assembly 30 concentrically disposed about a rotating shaft 14 to prevent a cooling liquid 22 that flows through the shaft 14 from entering an environment with

windings and bearings. (4:52-5:30). Although Kostrzewski mentions fast feed rates during a machining process, Kostrzewski is silent as to the manner in which the feed rate is achieved.

Kostrzewski does not remedy the above-noted deficiencies of York, Ellerstein, and Orrell. Specifically, Kostrzewski fails to teach or fairly suggest an apparatus that includes “*a servo motor operatively coupled to the at least one drive member by a feed unit that includes at least one drive belt operatively coupled between an output shaft of the servo motor and the at least one drive member such that as the servo motor drives the at least one drive member, the separation distance is varied*” as recited in claim 1. Accordingly, claim 1 is allowable over Kostrzewski, either singly or in any properly motivated combination with York, Ellerstein, and Orrell.

Brown (U.S. 6,382,889)

Brown teaches a multi-axis drilling machine having a frame 30 that engages a workpiece, and a pair of 2-axis positioning devices that position a drill 54 over a desired location on the workpiece. According to Brown, cylinders 124 or ball screw mechanisms may be used to drive the drill 54 into engagement with the workpiece. (6:67-7:3; 7:19-25).

Brown does not remedy the above-noted deficiencies of York, Ellerstein, Orrell, and Kostrzewski. Specifically, Brown fails to teach or fairly suggest an apparatus that includes “*a servo motor operatively coupled to the at least one drive member by a feed unit that includes at least one drive belt operatively coupled between an output shaft of the servo motor and the at least one drive member such that as the servo motor drives the at least one drive member, the separation distance is varied*” as recited in claim 1. Accordingly, claim 1 is allowable over Brown, either singly or in any properly motivated combination with York, Ellerstein, Orrell, and Kostrzewski.

For the foregoing reasons, claim 1 is allowable over York, Ellerstein, Orrell, Kostrzewski, and Brown, either singly in any properly motivated combination. Claims 2-12

depend from claim 1 and are allowable at least due to their dependencies on claim 1, and also due to additional limitations recited in these claims.

For example, claim the apparatus of Claim 1, *wherein the at least one drive member includes first and second drive members and wherein the at least one drive belt includes a first drive belt operatively coupled between the output shaft and the first drive member, and a second drive belt operatively coupled between the output shaft and the second drive member.* Similarly, claim 5 recites the apparatus of Claim 2 wherein the *first and second drive members are positioned on opposing sides of the first and second apertures.* These additional limitations are also not disclosed or suggested by the cited references.

Claims 13-22

Similarly, claim 13 recites an apparatus that includes *a track assembly configured to be attached to the workpiece; a carriage assembly moveably coupled to the track assembly and moveable relative to the workpiece; and a tool feed unit coupled to the carriage assembly and configured to be coupled to a tool assembly and to controllably engage the tool assembly with the workpiece,* the tool feed unit including: a base member having a first aperture disposed therethrough; a drive platform having a second aperture disposed therethrough, the drive platform being spaced apart from the base member by a separation distance and aligned with the base member such that the first and second apertures are approximately aligned along an axis; a plurality of guide members extending between the drive platform and the base member, at least one of the drive platform and the base member being moveable along the guide members to at least one of increase and decrease the separation distance; at least one drive member operatively coupled between the drive platform and the base member, wherein the plurality of guide members and the at least one drive member are distributed around a perimeter of the first and second apertures; and a servo motor operatively coupled to the at least one drive member such

that as the servo motor drives the at least one drive member, the separation distance is varied. (emphasis added).

Boyl-Davis (U.S. 6,843,328)

Applicant respectfully notes that the provisions of 35 U.S.C. § 103(c) of the American Inventors Protection Act regarding subject matter that qualifies as anticipatory art under 35 U.S.C. § 102(e) apply to Boyl-Davis. Accordingly, Boyl-Davis may not be used to preclude the patentability of pending claims 13-21.

More specifically, Applicant submits that Boyl-Davis qualifies as anticipatory art only under 35 U.S.C. § 102(e) because (A) Boyl-Davis is a U.S. patent with a filing date (Dec. 10, 2001) earlier than the effective filing date of the subject application (June 25, 2003), with a publication date (Jan. 18, 2005) that is not more than one year prior to the effective filing date of the subject application, and (B) the inventive entity of the subject application (Buttrick) is different than that of the cited reference (Boyl-Davis *et al.*). See MPEP § 706.02(a).

Furthermore, Boyl-Davis is assigned to The Boeing Company. Applicants respectfully submit that, at the time the subject matter of the present application was made, it was owned by, or subject to an obligation of assignment to, the same entity, namely The Boeing Company, as evidenced by the assignment filed herein and recorded at Reel 014259 and Frame 0050.

Under the American Inventor's Protection Act, 35 U.S.C. § 103(c) as amended provides that art "which qualifies as prior art under one or more of subsections (e) (f) and (g) of section 102 shall not preclude patentability under this section ...where the subject matter was at the time the invention was made, was owned by the same person or subject to an obligation of assignment to the same person." See MPEP § 706.02(1)(1). Because 35 U.S.C. § 103(c) applies, Boyl-Davis may not be used to preclude the patentability of the pending claims.

Since the other cited references (York, Ellerstein, Orrell, Kostorzewski, and Brown), either singly in any properly motivated combination, do not teach or fairly suggest an apparatus that includes *a track assembly configured to be attached to the workpiece; a carriage assembly moveably coupled to the track assembly and moveable relative to the workpiece; and a tool feed*

unit coupled to the carriage assembly and configured to be coupled to a tool assembly and to controllably engage the tool assembly with the workpiece as recited in claim 13, claim 13 is allowable. Claims 14-22 depend from claim 13 and are allowable at least due to their dependencies on claim 13 and also due to additional limitations recited in those claims.

For example, claim 14 recites the apparatus of Claim 13, wherein the at least one drive member includes first and second drive members and wherein the servo motor includes an output shaft, the apparatus further comprising a first drive belt operatively coupled between the output shaft and the first drive member, and a second drive belt operatively coupled between the output shaft and the second drive member. Similarly, claim 19 recites the apparatus of Claim 14, wherein the first and second drive members are positioned on opposing sides of the first and second apertures. These additional limitations are also not taught or fairly suggested by the cited references.

Claims 23-28

Claim 23 recites a method of performing a manufacturing operation on a workpiece, the method comprising providing a tool feed unit having a base member moveably coupled to a drive platform by a plurality of guide members, the base member defining a first aperture and the drive platform defining a second aperture approximately aligned with the first aperture along an axis, at least one of the drive platform and the base member being moveable along the guide members to increase or decrease a separation distance therebetween, the tool feed unit including at least one drive member operatively coupled between the drive platform and the base member, and a servo motor operatively coupled to the at least one drive member, wherein the plurality of guide members and the at least one drive member are distributed around a perimeter of the first and second apertures; operatively coupling a manufacturing tool to the tool feed unit; and controllably rotating the at least one drive member using the servo motor to vary a separation distance between the drive platform and the base member and to engage the manufacturing tool with the workpiece. (emphasis added).

As noted above, under the provisions of 35 U.S.C. § 103(c) of the American Inventors Protection Act, *Boyl-Davis* may not be used to preclude the patentability of pending claims 23-28. Therefore, claims 23-28 are allowable over the cited references.

In addition, the cited references fail to teach or suggest the limitations recited in claims 27 and 28. Specifically, claim 27 recites the method of Claim 23, wherein controllably rotating the at least one drive member includes *controllably rotating the at least one drive member using a drive belt operatively coupled between an output shaft of the servo motor and the at least one drive member*. Similarly, claim 28 recites the method of Claim 23, wherein controllably rotating the at least one drive member includes *simultaneously rotating a first drive member using a first drive belt operatively coupled between an output shaft of the servo motor and the first drive member, and a second drive member using a second drive belt operatively coupled between the output shaft and the second drive member*. These additional limitations are also not taught or fairly suggested by the cited references.

CONCLUSION

Applicant respectfully submits that pending claims 1-28 are now in condition for allowance. If there are any remaining matters that may be handled by telephone conference, the Examiner is kindly invited to telephone the undersigned at the telephone number listed below.

Respectfully Submitted,

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